Chemistry 351: Independent Study Research

Dr. T. Christian Grattan (Office Sims 301B)
Spring 2011 – Winthrop University
W 10:00-10:50 AM (Sims 301B)
1 Credit (section 1), 2 credits (section 2)

Textbooks: *The ACS Style Guide*, 3rd ed., Coghill and Garson, 2006 (or 2nd ed., 1997)

Course Objectives: This course represents the second half of a two-semester sequence (Chem 551) intended to provide you with experience in conducting a year-long research project and presenting your results. Your work this semester will again focus on the following:

- Planning and conducting an investigation in one of the main disciplines of chemistry
- Completing searches of the chemical literature relevant to your topic
- Collecting and analyzing data
- Writing a research paper in the style of a scholarly article
- Presenting your work orally, both formally and informally

Office Hours: M 2:00 – 3:00 PM, T 1:30 – 2:30, W 11:00 – 12:00 PM or by appointment

Contact information (x4927) / grattanc@winthrop.edu

Attendance: Due to the unique nature of this course, each and every class meeting is important to facilitate the growth and development of your overall research experience. Class time will be spent discussing research progress and methods, analyzing literature articles and reviewing students' writing. The students are responsible for all assignments for the course regardless of absence. Students are required to attend and participate in all meetings; each class missed will drop you one letter grade, A → A- for example.

Time Commitment: You are expected to devote 3-6 hours per week to laboratory research, in addition to time spent preparing course assignments. Additional requirements will be outlined by your research mentor.

Research Mentor: Your research mentor will again outline the project goals and guide your research throughout the semester, providing instruction in techniques and instrumentation as required, and making you aware of potential hazards and proper

safety protocols. He or she will also be the first reviewer of your oral and written work. You are expected to meet with your mentor at least once each week.

Research Committee and Committee Chair: Your research committees will continue to track your progress and help to evaluate your work. You will be responsible for getting assignments to committee members and arranging the required committee meeting(s).

Assignment Policies:

- ***Written assignments***

  1. Your signed Course Contract and your Project Summary, described below, must be submitted to Dr. Grattan, in addition to your mentor and committee members.

  2. Drafts of other written assignments (e.g., Literature Search, Progress Report), must be submitted to mentors by the scheduled due dates.

- ***Oral assignments***.

  1. You are required to discuss all oral assignments with your mentor prior to presenting them, either in class or in front of your committee.

  2. All committee members will participate in grading your presentations to them.

  3. Your final oral presentation will be given to the Chemistry faculty. All Chemistry faculty will participate in grading this presentation.

Assignments/Grading:

1. **Course Contract** (20 pts) An individual, signed agreement between student, mentor, and committee members that specifies the expectations for the semester. At a minimum, this must include:

- Names and signatures for all parties, with one committee member designated the Committee Chair
- The number of hours the student will work each week (the student should keep a log of hours worked)
- The approximate days and times the student will be in the lab
- A schedule for regular (weekly) student-mentor meetings

- Any additional course requirements not listed on this general syllabus

Copies of the completed contract must be shared with all participants; additionally, a copy must be submitted to Dr. Grattan.

2. **Project Summary to Safety Committee** (30 pts) A description of materials and methods, hazards, and safety precautions to be encountered in the course of the semester, as outlined in the Chemical Hygiene Plan (Section C7, handed out in class), to be completed in consultation with your mentor. Copies of the completed Project Summary should be submitted to mentor, committee members and Dr. Grattan. You are also required to attend a safety training session, to be given by Dr. Snyder.

3. **Progress Report** (50 pts) A written description of your project goals for the semester, to include benchmarks for laboratory progress and aims for improvement of the presentation. This should also include an updated literature search to align with the current direction of your project and a focused effort on any new areas that have yet to be explored in the literature.

4. **Committee Meeting #1** (50 pts) An oral presentation to the committee (15-20 minutes) given during the week of Feb. 14th. The goal will be to brief committee members on semester plans.

5. **Committee Meeting #2** (100 pts) A (nearly) complete presentation of your research project including a detailed discussion of your results and plans for any remaining laboratory work still to be completed. This will be **presented orally to the committee in the form of a 15- to 20-minute PowerPoint presentation** during the week of March 28th.

7. **Literature Search** (50 pts) You will perform a literature search to study research aspects and background related to your project. The literature search will be turned in with a full reference citation and a summary of the article content. The summary should identify why this article is relevant to your research, what and how they studied this aspect and what conclusions they arrived at in the paper.

8. **Final Presentation** (150 pts) A 10-12-minute oral (PowerPoint) presentation of the semester's work given to students and faculty **at the semester's end (Thursday, April 21st, 11:00-12:00 PM)**. The successful presenter will: (1) review the goals and significance of the project and the scientific basis of the techniques employed, (2) describe experimental methods utilized and results obtained, (3) discuss the interpretation(s) and implications of the results and (4) briefly describe possible future directions for the project.

10. **Laboratory Notebook** (50 pts) Mentors will grade notebooks on format, neatness, and completeness.

11. **Laboratory Technique** (50 pts) Mentors will assign grades based on the quality of students' laboratory work.

***Total Points Possible*: 550**